



March 17, 2014

Regional Administrator
U.S. EPA Region V c/o
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155
Attn: Leah Evison

Director, Remediation
Site Remediation Section
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155
Attn: Nile Fellows

Subject: United States of America, et al., vs. Reilly Tar and Chemical Corporation, et al., File No. Civ. 4-80-469. CD-RAP Section 3.4.

Dear Leah and Nile,

Attached please find the 2013 Annual Monitoring Report for the Reilly Site submitted on behalf of the City of St. Louis Park (City). In the interest of streamlining the annual reports, this year's monitoring report includes a new Chapter 2 that consists of the City's annual monitoring report for the granular activated carbon systems. Prior to now the GAC report was submitted separately. The annual monitoring report contains all well pumping data for the Reilly Site wells. Prior to now those data were reported in the GAC and/or Annual Progress Reports. The 2013 Annual Progress Report has been prepared and submitted separately.

As you know, the 2013 analytical results were submitted to you throughout the year as sampling progressed. For this reason the data are not re-submitted in this annual report. Please let us know if you are missing any 2013 analytical results.

If you have any questions or comments concerning this submittal, please contact this office.

Sincerely,
Summit Envirosolutions, Inc.

William M. Gregg
Project Leader for the City of St. Louis Park

cc. Jay and Mark Hanson (City of St. Louis Park)
John Jones (Vertellus)

**ANNUAL MONITORING REPORT
FOR 2013**

SUBMITTED TO THE

**REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

**EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY**

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

**PURSUANT TO
CONSENT DECREE - REMEDIAL ACTION PLAN
SECTION 3.4**

UNITED STATES OF AMERICA, ET AL.

vs.

REILLY TAR & CHEMICAL CORPORATION, ET AL.

**UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
CIVIL NO. 4-80-469**

March 15, 2014

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1.0 INTRODUCTION

Pursuant to Section 3.4 of the Consent Decree - Remedial Action Plan (CD-RAP) in the case of the United States of America, *et al.* vs. Reilly Tar & Chemical Corporation, *et al.*, this report presents the results of all chemical analyses and water level measurements for calendar year 2013 that are required under the CD-RAP, but are not presented in previous reports. Analytical data reports and data validation reports have been provided to the Agencies as available throughout the year.

The ground water monitoring conducted in 2013 was performed in accordance with the methods and procedures identified in the 2013 Sampling Plan. The City of St. Louis Park (City) has overall responsibility for conducting the ground water monitoring required by the CD-RAP. In accordance with the 2013 Sampling Plan, Summit Envirosolutions, Inc. (Summit) collected ground water samples from monitoring wells. TestAmerica Laboratories, Inc. (TA) and Pace Analytical Services (Pace) performed the analyses for PAH. The CD-RAP specifies drinking water criteria and advisory levels for PAH. The advisory levels for the sum of benzo(a)pyrene and dibenz(a,h)anthracene, carcinogenic PAH, and Other PAH are 3, 15 and 175 nanograms/liter (ng/l or parts per trillion), respectively. The drinking water criteria are 5.6, 28, and 280 ng/l for the same three sums. The CD-RAP calls for resampling active drinking water wells that exceed these criteria.

Section

The 2013 monitoring data are presented separately for each aquifer, starting with the Mt. Simon-Hinckley Aquifer, which is the deepest aquifer below the ground surface, and ending with the Drift Aquifer, which is the uppermost aquifer monitored. A series of maps has been prepared to support the aquifer by aquifer review and presentation of the 2013 monitoring data, pursuant to Section 3.4 of the CD-RAP.

Groundwater monitoring has been conducted in each of the 26 years from 1988 to 2013, in accordance with the CD-RAP for the former Reilly Tar & Chemical Corporation site (Reilly Site or Site). The historical analytical results offer the opportunity to compare the 2013 monitoring data and assess changes in the PAH concentrations over time. A series of tables has been prepared for each aquifer to help present the analytical results since 1988.

The CD-RAP relied on pump and treat technology to control PAH concentrations in groundwater in each aquifer containing PAH contamination due to Reilly's activities at the Site. New wells were drilled in the Drift, Platteville, and St. Peter Aquifers for that purpose and the municipal drinking water supply wells in the Prairie du Chien – Jordan Aquifer are pumped at specified minimum

rates in accordance with the CD-RAP. Each aquifer by aquifer data review includes pumping data for 2013 and a discussion of the effectiveness of the pumping wells in meeting the objectives of the CD-RAP. Currently, no pumping is required in the Ironton-Galesville and Mount Simon – Hinckley Aquifers.

A laboratory data review was conducted to assess the quality of the laboratory data. The data quality assessment (DQA) can be found in Section 9.0 of this report. Additionally, all of the 2013 Test America data and a portion of the Pace data underwent full data validation. The 2013 data were provided to the Agencies previously.

2.0 GRANULAR ACTIVATED CARBON TREATMENT SYSTEM

Operation:

The City operated the Granular Activated Carbon (GAC) treatment system in substantial compliance with Section 4.2 of the Remedial Action Plan (RAP) during 2013, treating approximately 280 million gallons of water pumped from SLP10. This equates to an average of 23.299 million gallons per month during the twelve months of operation. RAP Section 4.2.1 Operating Rate states, "Reilly shall operate wells SLP10 and/or SLP15 and the GAC treatment system at a minimum annual pumping rate of 200 million gallons per year, with a minimum pumping rate of 10 million gallons in any calendar month..." The operation of the GAC treatment system did meet the minimum quantities required. The monthly pump data for 2013 is included in the attached Table 4.

Monitoring:

The 2013 monitoring was jointly conducted by Summit and TestAmerica Laboratories. Summit collected all samples and TestAmerica was responsible for the analytical services. Laboratory analyses were conducted at the TestAmerica laboratory in Arvada, Colorado.

The 2013 monitoring schedule, as established in the 2013 Sampling Plan developed in accordance with the requirements of Section 3.3 of the RAP, provided for quarterly monitoring of the treatment system effluent, and annual monitoring of the treatment system feed water for PAH and for acid fraction analysis (Section 4.3.4). The samples were collected and analyzed in compliance with the 2013 Sampling Plan and previously reported to the Agencies.

Additional Information:

The CD-RAP provides the operational criteria for the GAC facility located adjacent to Water Treatment Plant No. 1, located at 2936 Idaho Avenue that treats water produced by SLP 10 or 15. The City constructed an additional GAC facility in 1994 located at 4701 West 41st Street (GAC-4) which treats water produced by SLP 4. This GAC facility is not referenced in the RAP. The City operates the GAC 4 facility within the Drinking Water Criteria established in Section 2.2. The facility is operated on a continuous schedule to pump greater than the minimum pumping requirements of the CD-RAP, in order to augment the Prairie du Chien – Jordan Aquifer gradient control system. The system is operated in a series of four 20,000 pound GAC vessels.

The City operated GAC 4 in substantial compliance with Section 4.2 of the Remedial Action Plan (RAP) during 2013, treating approximately 492 million gallons of water pumped from SLP4. This equates to an average of 40.994 million gallons per month. The monthly pump data for 2013 is included in the attached Table 4.

3.0 MT. SIMON-HINCKLEY AQUIFER

St. Louis Park municipal water supply wells SLP11, SLP12, and SLP13 were sampled in September 2013. The City abandoned well SLP17 in 2013, so this well is no longer available for sampling. Neither the City nor the Minnesota Department of Health (MDH) issued permits for any new Mt. Simon-Hinckley Aquifer wells within the boundaries of the City of St. Louis Park (encompassing greater than a one mile radius around well W23 as specified in Section 5.3.2 of the CD-RAP) in 2013. The 2013 groundwater monitoring data for the Mt. Simon-Hinckley wells are shown on **Figure 1**. Locations that were sampled more than once are labeled with the most recent test results.

Table 1 lists the historical results since 1988 of other PAH and carcinogenic PAH data collected from wells SLP11, SLP12, and SLP13. The concentrations of PAH remain below the CD-RAP drinking water criteria in the Mt. Simon-Hinckley Aquifer municipal wells. An anomalous result was obtained for the sample from SLP13 in September 2013. The SLP13 result exceeded the CD-RAP drinking water criteria for carcinogenic PAH and Other PAH were reported at higher concentrations than in any previous monitoring round. Because of the exceedance, well SLP13 was resampled on November 7th and December 9th 2013 in accordance with CD-RAP Section 12.1. Both tests showed low levels of PAH consistent with historical results for this well. The City concludes that the September result was not representative of the aquifer water quality.

Remedial actions for the Mt. Simon-Hinckley Aquifer included the re-construction of wells W23 and W105 in 1987 to eliminate those pathways for PAH to migrate from shallower aquifers. Pumping in the Mt. Simon-Hinckley Aquifer is solely for the purpose of water supply. Thus, monitoring the quality of the water in 2013 provided ongoing assurance that no further remedial actions were needed.

4.0 IRONTON-GALESVILLE AQUIFER

Analytical results from ground water samples collected during 1988 through 1991 from well W105 had consistently met the criterion (less than 10 parts per billion total PAH) for discontinuing the 25 gallons per minute (gpm) pumping rate. Therefore, in accordance with CD-RAP Section 6.1.5, the pump in well W105 was inactivated on December 23, 1991, and remains inactivate. The CD-RAP specified the 25 gpm pumping rate at well W105 to mitigate the potential source this well may have been to the Ironton-Galesville Aquifer. When pumping, well W105 likely exerted hydraulic control over a relatively small area in the vicinity of the well.

Neither the City nor the MDH issued permits for any new Ironton-Galesville Aquifer wells within the boundaries of the City of St. Louis Park (encompassing greater than a one mile radius around well W23 as specified in Section 6.2.1 of the CD-RAP) in 2013. Therefore, in accordance with the CD-RAP and the sampling plan, the only monitoring in this aquifer involved well W105. The well W105 pump remains installed in the well and samples are collected from a valve in the discharge pipe within the well house.

Well W105 was sampled on June 20, 2013 and analyzed for priority pollutant PAH by Pace Analytical in accordance with the 2013 Sampling Plan. On December 9 well W105 was sampled for a second time in 2013 and analyzed for the full list of PAH by Test America in accordance with the Agencies' July 1, 2013 letter. The results for both samples indicated total PAH concentrations below the cessation criterion of 10 parts per billion.

The historical analytical results for well W105 from 1988 through 2013 are summarized on **Table 2**. The overall water quality remains below the cessation criteria. Thus, remedial action goals are being met in this aquifer at the Site.

5.0 PRAIRIE DU CHIEN-JORDAN AQUIFER

Prairie du Chien-Jordan Aquifer wells were monitored in accordance with the 2013 Sampling Plan. A total of 22 Prairie du Chien-Jordan Aquifer wells were used to collect ground water samples during 2013. Well E13 was due to be sampled twice in 2013, but it was not available during the first sampling event due to a pump failure. Well E13 was sampled on December 9, 2013. None of the active municipal wells contained PAH concentrations exceeding the CD-RAP drinking water criteria or advisory levels (except for well SLP10 which is treated with carbon) thus no resampling per CD-RAP Section 12 was necessary for Prairie du Chien-Jordan Aquifer wells in 2013.

In addition to water quality monitoring, ground water elevations were recorded at most municipal Prairie du Chien-Jordan Aquifer wells which are equipped with pressure transducers. The transducers typically record water level measurements every 10 to 15 minutes. Water level and flow data are available for most St. Louis Park and Edina municipal wells for all of 2013. **Table 3** contains water level elevations measured at the time of sampling in each aquifer.

The direction of ground water flow in the Prairie du Chien-Jordan Aquifer is strongly affected by pumping wells. **Table 4** presents the monthly pumping records for wells W23, SLP4, and SLP10 which are pumped in accordance with the requirements of the CD-RAP. Municipal wells in St. Louis Park and surrounding cities typically pump at 1,000 gpm or more, and have a considerable effect on localized ground water flow. As a result, it is not possible to measure a regional or local gradient that is unaffected by pumping. According to several literature resources, including the USGS (Water Supply Paper 2211, 1984), Norvitch and others (Water Resources Outlook of the Minneapolis and St. Paul Metropolitan Area, 1973), the regional ground water flow in the Prairie du Chien-Jordan Aquifer is toward the east.

The 2013 groundwater monitoring data for the Prairie du Chien-Jordan are shown in **Figure 2**. Locations that were sampled more than once are labeled with the most recent test results. The groundwater surface shown in **Figure 2** was made using water level data and a linear-log kriging algorithm developed by Papadopoulos and Associates, Inc. and described in “KT3D_H2O: A Program for Kriging Water Level Data Using Hydrologic Drift Terms” (Karanovic, et al, GROUND WATER, Vol. 47, No. 4, July-August 2009, pp. 580-586) and “Kriging Water Levels with a Regional-Linear and Point-Logarithmic Drift” (Tonkin, et al, GROUND WATER, Vol. 40, No. 2, March-April 2002, pp. 185-193). Summit used the KT3D_H2O computer code with Prairie du Chien – Jordan Aquifer water level data collected in September 2013 to generate the potentiometric surface (groundwater elevation contours) shown in **Figure 2**.

Table 5 presents a historical summary of analytical results from 1988 through 2013 for Prairie du Chien-Jordan Aquifer wells. In 2013, PAH concentrations in excess of the CD-RAP drinking water criteria were found in samples from well W23 on the Reilly Site and well SLP10 the nearest

municipal well (which is preferentially pumped to limit the spread of PAH). The analytical results for samples from well W403 suggest that historic PAH concentrations resulted from debris in the well. Cleanout of well W403 in late 2012 and early 2013 appears to have removed the source of PAH to the well samples. PAH concentrations in samples from wells E7 and E13 were lower in 2013 compared to prior recent years.

6.0 ST. PETER AQUIFER

Thirteen St. Peter Aquifer wells were monitored in 2013 in accordance with the 2013 Sampling Plan. In addition to water quality monitoring (31 compounds at the part per trillion-level test method), groundwater elevations were measured in St. Peter Aquifer wells as shown on **Table 3**. **Table 6** presents a historical summary of analytical results from 1988 through 2013 for St. Peter Aquifer wells.

The 2013 St. Peter Aquifer groundwater monitoring data are shown in **Figure 3**. Locations that were sampled more than once are labeled with the most recent test results. The potentiometric surface shown in **Figure 3** was made using water level data and the linear-log kriging algorithm developed by Papadopoulos and Associates, Inc.

The flow rate for well W410 averaged 44 gpm for the year, as measured and recorded by the City (**Table 7**). In prior years well W410 was able to be pumped at a higher rate, and often averaged more than 50 gpm. The City performed maintenance on the well in 2013 by having a licensed water well contractor redevelop the well to improve its specific capacity. Currently the well can sustain a pumping rate of approximately 40 gpm. The potentiometric surface map in **Figure 3** depicts the water surface in September 2013 and shows influence of pumping well W410 at 40 gpm on water levels in the St. Peter Aquifer.

The data in **Table 6** show a continuation of an increasing trend for OPAH at well W410. Well W410 is drawing water and PAH from the vicinity of the Reilly Site into its discharge. Well W129 has shown an increasing concentration of OPAH in recent years, due exclusively to 2,3 dihydroindene. None of the other historical or current Reilly Site monitoring, in any aquifer, has detected a similar pattern of increasing PAH concentrations due to this chemical. As such, the cause for this increase is unknown but is not attributable to inadequate performance of well W410. If Reilly Site PAH contamination was able to migrate beyond well W410's capture area, other downgradient wells besides well W129 would be affected (e.g., W414, W412, and/or W411) and the number of PAH detected would consist of more compounds than just 2,3 dihydroindene.

7.0 PLATTEVILLE AQUIFER

In accordance with the 2013 Sampling Plan, 17 samples were collected from 16 Platteville Aquifer monitoring wells in 2013. In addition to water quality monitoring, ground water elevations were measured in Platteville Aquifer wells on the sampling dates (**Table 3**).

Table 8 is a historical summary of analytical results since 1988 for Platteville Aquifer wells. Overall, the 2013 PAH concentrations in Platteville Aquifer samples were similar in magnitude to prior analytical results. Increasing PAH concentrations at well W426 may indicate the effects of pumping well W439 nearby.

The 2013 groundwater monitoring data for the Platteville Aquifer are shown in **Figure 4**. Locations that were sampled more than once are labeled with the most recent test results. Summit used the Platteville Aquifer water level data from **Table 3** to generate the potentiometric surface shown in **Figure 4**.

The monthly pumping data for well W421 is provided in **Table 9**. Dewatering for the construction project at the intersection of Trunk Highway 7 and Louisiana Avenue necessitated discontinuing pumping of well W421 beginning in August 2013. The potentiometric surface map in **Figure 4** is based on data collected during the sampling round in June 2013 at a time when well W421 was pumping at an average rate of approximately 21 gpm.

8.0 DRIFT AQUIFER

In accordance with the 2013 Sampling Plan, 21 samples were collected from 20 Drift Aquifer monitoring wells (including pumping wells) in 2012. However, well W439 (the Drift Aquifer gradient control well for the Northern Area) was sampled once in 2013 instead of twice, due to an oversight. In addition to water quality monitoring, ground water elevations were measured in the Drift Aquifer wells on the sampling dates (**Table 3**).

Table 10 is a historical summary of analytical results since 1988 for Drift Aquifer wells. The 2013 PAH concentrations in Drift Aquifer samples were similar in magnitude to prior analytical results.

The 2013 groundwater monitoring data for the Drift Aquifer are shown in **Figure 5**. Locations that were sampled more than once are labeled with the most recent test results. Summit used the Drift Aquifer water level data from **Table 3** to generate the potentiometric surface shown in **Figure 5**.

The monthly pumping data for wells W420 and W439 and for the dewatering project for the reconstruction of the intersection of Trunk Highway 7 and Louisiana Avenue are provided in **Table 9**. Dewatering necessitated discontinuing pumping of well W420 beginning in August 2013. The potentiometric surface map in **Figure 5** is based on data collected during the June 2013 sampling event, prior to dewatering, when well W420 was pumping at an average rate of approximately 47 gpm and well W439 was pumping at an average rate of approximately 17 gpm.

9.0 DATA QUALITY ASSESSMENT

All of the 2013 laboratory results from Test America Laboratories underwent full data validation. The data validation reports are appended to each data package provided on the disk accompanying this report. In accordance with standard validation procedures, corrections to the data were made in the form of adding qualifiers, rejecting results, or other changes indicated by the validation process. Thus, the validated sums for various groups of PAH may be different than the sums calculated using raw data.

The data validation guidelines were defined in the Quality Assurance Project Plan (QAPP). The validation was conducted as follows. The number of samples was checked to verify that the results corresponded to the analytical requests designated on the chain of custody. The chain of custody was examined to determine the completeness pertaining to sampling dates, times, quantities, and analyses performed. The sample holding times, preservation, and cooler temperatures were noted. The method blanks, field blanks, equipment blanks, and trip blanks were examined for any contamination problems. Surrogate spike recoveries were checked to confirm they were within the range determined by the QAPP quality control (QC) limits. Matrix spikes and laboratory control samples (LCS) were reviewed to confirm they meet the QC acceptance criteria. All duplicate samples were checked for precision. In addition, sample quantitation limits (SQLs) were compared to those required in the QAPP. Validation included a review of the gas chromatography/mass spectrometry (GC/MS) tuning, the initial and continuing calibrations, and internal standard performance.

Issues noted in the validation reports associated with the Test America data included the following:

- PAH were found in field blanks and method blanks, which should be free of PAH. These findings impact samples that contain the same PAH compounds at concentrations within five times the level found in the blanks.
- Surrogate recoveries were outside acceptable limits in some samples, mostly too low. Samples affected by low surrogate recoveries had some PAH qualified as estimated values (biased low) and non-detected values were rejected.
- Matrix spike and matrix spike duplicate (MS/MSD) pairs contained PAH outside acceptable recovery limits. This problem also resulted in some data qualified as estimated and non-detected values were rejected.
- Laboratory control samples occasionally had low recoveries for acridine and less frequently for perylene, resulting in the data qualified as estimated low and non-detected values were rejected.

Parent and duplicate samples generally showed relative percent differences within 25% for PAH that were detected at least five times the detection limit. As indicated in the attached validation reports, some data were qualified as estimated or non-detect based on discrepancies between the analyses.

Because none of the samples exceeded the Drinking Water Criteria or the Advisory Levels based on changes to the various PAH sums as a result of validation, the overall usability of the data is not impacted. The QAPP gives a project completeness goal of 95% which was not met in 2013 due to the amount of data rejected. However, the normal procedure to resample and produce additional laboratory analyses was not recommended because these quality issues are reproduced with each analysis and remain an ongoing concern.

The review of PAH data reported by Pace Analytical Services for fourth quarter samples from wells W420 and W421 resulted in the qualification of benzo(k)fluoranthene due to a high relative percent difference in the field duplicate samples. The reported results are estimated. All other data from Pace were considered valid.

Tables

Table 1
Historical Summary of Other PAH and CPAH
Analytical Results 1988 through 2013,
SLP 11, 12, 13, and 17

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	SLP11		SLP12		SLP13		SLP17	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	42	0	10	0	15	0	12
1989	0	34	0	16	0	9	0	12
1990			0	109	0	14	0	18
1991	0	51	0	21	0	13	0	17
1992	0	43	1	25	2	11	3	47
1993	0	50	0	9	0	10	0	12
1994	0	66	0	21	0	28	4	36
1995	0	113	0	9	0	9	0	8
1996	0	109	0	3	0	5	0	5
1997	0	78	0	12	0	22	62	412
1998			0	3	0	4	0	3
1999	0	156	0	10	0	15	0	40
2000	0	22	0	11	0	6		
2001	0	19	0	2	0	0		
2002			3	7	0	0		
2003	46	47	0	2	0	0		
2004	0	26						
	0	22						
	0	27	0	21				
2005	0	27	0	5	0	10		
2006	1	27	0	4	3	8		
2007	0	30	0	4	0	5		
2008	0	28	0	1	0	10		
2009	0	10	0	0	0	0		
2010	0	11	0	2	0	4		
2011	0	112	0	4				
2012	0	0	0	0	0	0		
2013	0	6	0	0	133	55		
					0	0		
					0	0		

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*,
benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalen perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 2
Historical Summary of Other PAH and CPAH
Analytical Results in Well W105,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	W105	
	Total CPAH ¹	Total Other PAH ²
1988	0 ³	3,670
	0	2,614
1989	0	1,400
	0	1,086
1990	0	2,019
	0	2,347
	0	2,600
	0	1,548
	0	0
1991	0	1,460
	10	2,164
	0	1,014
1992	0	2,185
	381	5,057
	21	30,900
1993	39	1,966
1994	71	2,311
1996	29	2,746
1998	0	5,493
2000	89	5,595
2002	142	5,292
2004	33	2,380
2006	200	5,736
2008	195	14,546
2009	290	4,159
2010	105	13,797
	23	984
2012	75	944
2013	0	1,918
	95	2,331

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*,
benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole,
dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene,
perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 3 2013 Water Elevation Data

WELL	DATE	MP Elevation	DEPTH TO WATER	WL Elev
<i>St. Peter</i>				
SLP 3	9/16/2013	925.06	49.60	875.46
W14	9/17/2013	891.49	23.81	867.68
W21	6/13/2013	892.60	26.56	866.04
W24	9/16/2013	893.19	26.04	867.15
W33R	9/16/2013	893.99	25.85	868.14
W122	9/16/2013	918.58	62.78	855.80
W129	9/16/2013	916.33	48.39	867.94
W408	9/16/2013	923.53	51.76	871.77
W409	9/16/2013	923.61	54.27	869.34
W410	9/12/2013	908.04	75.03	833.01
W411	9/17/2013	896.25	31.76	864.49
W412	9/17/2013	915.17	49.63	865.54
W414	9/17/2013	921.29	55.59	865.70
W133	9/17/2013	921.06	55.90	865.16
<i>Platteville</i>				
W18	6/13/2013	893.33	9.54	883.79
W20	6/13/2013	895.83	17.22	878.61
W22	6/13/2013	897.06	11.88	885.18
W27	6/13/2013	910.47	27.31	883.16
W100	6/13/2013	899.71	11.21	888.50
W101	6/13/2013	918.03	40.82	877.21
W120	6/13/2013	919.81	40.88	878.93
W121	6/13/2013	922.85	50.89	871.96
W124	6/13/2013	887.65	22.81	864.84
W130	6/13/2013	894.83	21.91	872.92
W131	6/13/2013	919.27	39.18	880.09
W132	6/13/2013	904.95	32.60	872.35
W143	6/13/2013	905.31	26.04	879.27
W415	6/13/2013	920.16	45.20	874.96
W421	8/13/2013	895.86	12.00	883.86
W424	6/13/2013	917.57	34.57	883.00
W426	6/13/2013	923.95	41.17	882.78
W428	6/13/2013	919.40	39.19	880.21
W431	6/13/2013	922.77	46.32	876.45
W433	6/13/2013	925.84	46.62	879.22
W434	6/13/2013	919.70	40.75	878.95
W437	6/13/2013	913.18	30.27	882.91

UTM = Unable to measure

NA = Not Available

Table 3 2013 Water Elevation Data

WELL	DATE	MP Elevation	DEPTH TO WATER	WL Elev
W438	6/13/2013	921.12	40.61	880.51
<i>Drift</i>				
P109	6/13/2013	895.11	12.27	882.84
P112	6/13/2013	903.80	22.67	881.13
P307	6/13/2013	913.10	30.95	882.15
P308	6/13/2013	923.29	41.81	881.48
P309	6/13/2013	925.16	43.67	881.49
P310	6/13/2013	921.48	40.94	880.54
P312	6/13/2013	919.45	40.48	878.97
P313	6/13/2013	923.98	45.66	878.32
W2	6/13/2013	897.96	11.95	886.01
W9	6/13/2013	891.21	9.12	882.09
W10	6/13/2013	892.03	7.12	884.91
W15	6/13/2013	894.47	4.01	890.46
W117	6/13/2013	917.75	40.10	877.65
W128	6/13/2013	922.89	48.25	874.64
W136	6/13/2013	919.17	38.40	880.77
W416	6/13/2013	920.21	44.69	875.52
W420	12/9/2013	895.88	13.62	882.26
W422	6/13/2013	908.04	29.68	878.36
W423	6/13/2013	917.51	35.47	882.04
W425	6/13/2013	923.81	40.83	882.98
W427	6/13/2013	919.40	39.20	880.20
W439	6/13/2013	924.90	UTM	NA

UTM = Unable to measure
NA = Not Available

Table 3 2013 Water Elevation Data

WELL	DATE	MP Elevation	DEPTH TO WATER	WL Elev
<i>Prairie Du Chien</i>				
W23*	9/19/2013	897.22	110.00	787.22
W29*	9/19/2013	896.20	97.40	798.80
W119	9/19/2013	890.00	UTM	NA
W401	9/18/2013	922.99	UTM	NA
W402	9/18/2013	872.64	79.89	792.75
W403	9/18/2013	868.21	65.08	803.13
W406*	9/19/2013	920.28	116.00	804.28
W48	9/19/2013	893.93	94.17	799.76
SLP 4	9/19/2013	904.87	117.40	787.47
SLP 5	9/19/2013	927.13	129.00	798.13
SLP6	9/19/2013	914.87	UTM	NA
SLP 7	9/19/2013	903.49	100.90	802.59
SLP 8	9/19/2013	940.07	168.10	771.97
SLP 10	9/19/2013	927.81	160.70	767.11
SLP 14	9/19/2013	906.54	171.40	735.14
SLP 16	9/19/2013	934.34	193.20	741.14
E 2	9/19/2013	879.85	109.70	770.15
E 3	9/19/2013	877.65	UTM	NA
E 4	9/19/2013	892.35	18.00	874.35
E 5	9/19/2013	877.65	80.90	796.75
E 6	9/19/2013	911.98	166.10	745.88
E 7	9/19/2013	953.97	189.30	764.67
E 8	9/19/2013	876.08	85.10	790.98
E 11	9/19/2013	831.37	172.00	659.37
E 13	9/19/2013	935.47	UTM	NA
E 15	9/19/2013	898.10	UTM	NA
E 16	9/19/2013	891.44	95.00	796.44
E17	9/19/2013	864.37	79.30	785.07
E 18	9/19/2013	863.95	61.30	802.65
E 19	9/19/2013	948.95	167.20	781.75
E 20	9/19/2013	886.36	98.00	788.36
H 6	9/19/2013	961.00	UTM	NA
MTK 6	9/19/2013	916.94	UTM	NA
ETW	9/19/2013	902.03	772.51	790.90

UTM = Unable to measure

NA = Not Available

Table 4. Prairie du Chien – Jordan Aquifer 2013 Pumping Data

	SLP10		W23		SLP4	
Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	21,432,000	480	2,401,670	54	41,706,000	934
February	18,041,000	447	2,196,010	54	38,581,000	957
March	23,827,000	534	2,431,910	54	42,802,000	959
April	15,108,000	350	2,388,970	55	34,114,000	790
May	21,948,000	492	2,365,440	53	44,095,000	988
June	26,293,000	589	2,146,740	50	42,744,000	989
July	32,055,000	718	3,150,200	71	42,187,000	945
August	40,619,000	910	1,914,330	43	44,724,000	1,002
September	33,676,000	780	2,100,100	49	38,498,000	891
October	16,480,000	369	2,106,520	47	45,569,000	1,021
November	14,406,000	333	2,202,510	51	38,199,000	884
December	15,703,000	352	2,182,680	49	39,774,000	891
TOTAL	279,588,000	530	27,587,080	52	491,993,000	938

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	E13		E15		E2		E3		E4		E7	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	4	0	11	0	14	0	15				
1989	0	20	0	16	0	21	0	15				
	0	6			0	8						
1990	0	13	0	11	3	22	0	18				
	2	23			0	14						
1991	0	12	0	13	0	17						
	1	11			4	21	0	13				
1992	0	46	1	22			4	21				
							0	19				
1993	0	4	0	4	0	9	0	5				
1994	0	3	0	6	0	16	0	7				
1995	0	3	0	8			0	8				
					0	10						
1996	0	4	0	10	0	14	0	3			0	3
	0	5	0	29	0	20					0	5
1997	0	5	0	3	0	14					0	3
	0	8	0	14	0	13	0	4			0	2
1998	0	21	0	22	0	13	0	3			0	1
	0	36	0	7	0	196					0	6
1999					0	34						
	0	15	0	38			0	0			0	5
2000	0	35	0	19	0	6					0	2
	0	39	0	26	0	8	0	0			0	16
2001	0	49	0	14	0	6					0	9
	0	41	0	27	0	16	0	16			0	22
2002	0	80	0	5	0	0	0	0			0	29
2003	7	90	0	5	0	8	0	1			0	22
2004	0	116	0	15	0	5	0	4				
2005	0	208	0	26			0	5				
	0	169										
2006	0	170										
	0	112	0	13			0	7				
2007	9	156	0	9	0	72						
2008	0	158	0	5	0	7						
2009	0	169	0	5	0	8	0	0				
2010	0	142	0	7	0	4	0	2				
2011	0	154	0	8	0	9	0	3				
	2	155										
2012	0	177	0	1	0	0	0	15				
	0	137										
2013	0	186									7	51
	1	151									0	12
2013			0	1	0	1	0	8	0	0	0	19
	0	78									0	19

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	H3		H6	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	378	0	19
1989	0	93	0	16
	0	370		
1990	0	188	0	15
	500	8,743		
1992			0	16
1993			0	5
1994			0	6
1995			0	3
1996			0	3
1997			0	2
1998			0	5
1999			0	5
2000			0	5
2002			0	0
2004			0	8
2006			5	99
2008			0	16
2010			0	96
2012			0	38
2013			0	27

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	MTK6	
	Total CPAH ¹	Total Other PAH ²
1999	0 ³	2
2000	0	3
2002	0	0
2004	0	10
2006	0	14
2008	0	0
2010	0	3
2012	0	0
2013	0	0

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	SLP10		SLP14		SLP15		SLP16		SLP4		SLP5	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	8,200	0	112			0	48	0	244		
					0	27					0	613
1989			0	134	0	4,026	0	31			0	94
	0	260	0	84			0	24				
	0	5,123							0	232		
1990			0	98							0	210
	0	5,403							6	239	1	49
	0	7,386	0	145			8	374				
							1	60				
1991												
	5	315	1	99			1	32			1	42
	0	4,370	0	19			0	64				
1992			0	91								
	24	3,431			8	3,206	1	42			22	95
1993									0	237		
									0	259		
			0	78	7	2,211	0	17	0	493	5	77
1994									0	552		
	10	2,174	0	67			0	22	0	1,109		
1995	8	2,040	0	89			0	15				
	0	847							0	564		
1996	0	1,743	0	52			0	11	0	441		
									0	526		
1997			0	46					0	596		
	0	1,859					0	9	0	533		
1998	0	1,354	0	55			0	7	0	440		
									2	361		
									5	93		
1999	0	1,436	0	49			0	0	0	485		
									0	328		
2000	0	2,937	0	50			0	9	0	465		
									0	365		
2001	0	1,929							3	395		
2002	2	1,453	0	25			0	0	0	281		
2003	8	1,331							0	249		
2004					0	181	0	8	0	248		
2005	9	2,096							0	107		
	1	1,524	82	29			0	12	0	185		
			0	14								
2006			0	19								
2007	3	1,476							0	90		
2008	1	1,797	0	28			0	5	0	107		
2009					0	157			0	107		
			30	50			0	1	0	154		
2010	1	529	0	10								
2011	3	537							0	118		
2012	2	1,870	0	5			0	0	0	141		
2013	0	1,668	0	6			0	0	0	162	0	2

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	SLP7		SLP8	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	78	0	20
	0	51		
1989	0	61	0	8
	0	25		
	0	25	0	10
1990	0	43	0	19
	0	49		
	21	91		
	0	48		
1991	0	50	0	16
	0	37		
	0	65		
1992	0	41	2	10
			1	19
1993	0	32		
1994				
	0	22		
1995	0	28		
1996	0	22		
1997	0	11		
1998	0	17		
1999	0	17		
2000				
2001				
2002				
2003				
2004				
2005				
2006				
2007				
2008				
2009				
2010				
2011				
2012				
2013				

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013
All concentrations reported in nanograms per liter (ng/l).

Sampling Date	W112		W119		W29		W40		W401		W402	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	350	0	3	0	495	0	1,062				
1989			0	18	3	338	0	540	0	15		
			0	11							9	151
1990					9	369	16	705	2	27	47	720
											16	133
1991					6	405	5	474	0	28	16	498
											0	18,320
1992					12	531	5	283	0	10		
											26	896
1993					44	1,887	5	347	1	10	8	145
1994					10	749	4	484	0	8	5	104
1995					32	3,781	0	369	0	16	6	567
1996					0	82	0	498	0	19	0	396
									0	29		
1997					3	418	0	624			0	224
									0	174		
									0	121		
1998					0	261	0	220	0	66	0	349
									0	5		
1999					0	99	0	299	0	64	1	539
									0	23		
2000					3	212	2	129	0	105	0	1,287
									0	153		
2001					3	175	7	390	0	295	0	267
			0	294								
2002					0	44			0	149	13	167
					0	62					3	56
2003									0	64		
			1	195								
2004			0	127	11	162			0	196	73	67
			0	232								
2005			0	152							96	88
			0	140	0	21			0	92		
2006			0	210	9	45			0	48	3	91
			0	148								
2007			0	136	1	14			0	41	9	68
			0	138								
2008					0	20			0	35	0	48
			0	105								
2009			0	76	1	27			0	42	0	149
			0	124								
2010			0	95					0	9	1	77
			0	130								
2011			0	61								
			3	95					0	48	0	72
2012			0	26	1	92			0	3	0	24
			3	62								
2013			1	99								
			0	80								
2013			0	128.5	0	0			0	1.3	0	5.5

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	W403		W406		W407		W70	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	75					0	682
	40	1,113			0	36	5	426
1989	0	0					0	280
			0	26				
1990			8	43			9	560
	51	1,102	15	119				
1991	0	1,086	1	30			8	669
	0	11,570	0	42				
1992			6	53				
	19	993					8	401
1993	8	539	0	22			4	342
1994	0	1,278	0	31			22	364
1995	0	543	0	34			0	384
1996	8	182	0	21			0	342
1997	0	139	0	27			0	335
1998	0	11	0	15			0	307
1999	0	169	0	28			0	254
2000	0	195	0	30			0	3
2001	0	458						
2002	3	135						
	125	66					0	0
2003								
2004	131	91	0	13				
2005	4	83					7	18
2006	2	74	2	21			0	5
2007	302	329						
2008	1,003	868						
			0	11				
2009	450	376						
2010	121	173	0	7				
2011	178	91						
	165	140	0	8				
2012								
2013	1	61						
	0	24						
	0	0	0	9.4				
	0	21.5						

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	SLP6		W23		W48	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	33	0	111,100	0	2,418
	0	55	0	123,100		
1989	0	61	0	120,200	0	1,636
	0	36	0	117,600	0	1,850
	0	40	0	106,300	0	1,130
1990	0	48	0	129,100	0	1,690
	0	82			0	1,809
	3	117	0	114,700	22	4,566
	0	68	0	67,700		
1991	0	63	0	87,800		
	0	293				
	3	78	0	71,800		
	1	159	0	91,200		
	0	123	0	82,600		
1992	3	124	0	67,600		
	0	173	0	78,000		
1993	0	222				
	0	113			0	430
1994	0	98	0	60,000	0	286
			0	64,000		
1995			3,680	129,910		
	0	90	0	69,730	0	313
1996	0	181	0	47,880	0	261
	0	178	0	48,200		
	0	190				
	0	243				
	0	223				
1997	0	234				
	0	210				
	0	274				
	0	180	0	34,300		
	0	217	0	46,800	0	316
	0	148	0	0	0	290
1998	0	146			0	186
	0	173	0	42,090	0	50
1999			0	25,970	0	226
	0	174	0	14,850	0	226
2000	0	217	0	8,790	0	222
			0	37,980	0	134
			0	25,000		
2001			454	26,063	0	234
	0	158			0	149
	0	138			0	180
2002	0	181	0	28,700	0	222
	0	189	514	30,623	0	185
	0	231			0	149
	0	178			0	187
2003	0	124			0	108
	0	165			0	135
	2	138	514	23,391	0	138
	0	244			0	175

Table 5
Historical Summary of Other PAH and CPAH
Analytical Results for Prairie Du Chien-Jordan Aquifer Wells,
1988 through 2013

All concentrations reported in nanograms per liter (ng/l).

Sampling Date	SLP6		W23		W48	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
2004	0	240			0	159
	0	162	275	17,822	0	195
	0	250			0	163
	0	189			0	173
2005	0	205			0	144
	0	198	254	25,150	0	141
	3	186			0	82
	0	194			0	156
2006	0	127			0	154
	0	275	111	12,181	0	111
	7	217			0	169
	0	149			0	53
2007	0	196			0	154
	0	139	292	19,551	1	114
	0	206			0	156
	0	168			0	147
2008	0	173			0	132
	0	140	215	20,293	0	144
	0	196			0	191
	0	213			0	176
2009	0	206				
	0	144	365	14,370	0	156
	0	221			0	271
2010	0	198			0	163
	0	249	313	19,088	1	187
	0	192			0	187
	0	183	389	14,114	0	152
2011	0	183			0	143
	1	190	144	12,830	0	151
	0	188			8	153
					0	145
2012					0	155
	0	228			0	101
	2	205	558	16,818	2	187
	0	123			0	191
2013	0	182	234	14,464	0	347
	21	539	423	16,891	0	293

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno[1,2,3-cd]pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013
All concentrations reported in nanograms per liter (ng/l)

Sampling Date	SLP3		W122		W129		W133		W14		W24	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	10	16	142	0	88	0	52,370	54	95	0	3,309
	0	10	38	2,246	0	290	0	54,135	26	175	0	5,410
							0	29,830	0	438	0	3,622
1989	0	10	18	969	1	600	0	37,870				
	0	15	13	119	0	43	0	21,369				
1990	5	29			0	143	0	19,200				
	1	18			0	96	0	14,030				
1991			39	756	30	159	14	2,587			0	4,023
	0	24	10	853	0	430	0	4,610			0	4,160
1992	0	16	43	568	47	252	0	2,539			0	3,490
	0	24	7	179	5	296	0	2,244			0	3,650
1993	0	9	40	411	17	121	4	1,134			0	2,950
	0	5	26	330	2	53	0	836			0	3,294
1994	0	10	21	585	0	171	5	665			0	2,669
	0	6	14	374	2	112	0	434			0	4,029
1995	4	43	0	281	12	94	0	165			0	3,190
	0	31	11	220	0	55	0	157			0	1,550
1996	0	11	6	148	0	53	0	142			0	974
	0	4	0	235	0	75	0	285			0	1,603
1997	0	6	0	256	0	104	0	241			0	1,513
	0	4	0	243	0	181	0	108			0	1,340
1998	0	7	7	372	9	88	0	88			0	689
	0	247	0	99	0	8	0	299			0	1,120
1999	0	7	0	71	1	79	7	634			0	2,085
	0	0	5	48	0	79	0	190			0	3,590
2000	0	4	39	68	26	225	0	167			0	940
	2	25	6	160	8	150	0	327			35	951
2001	0	10	0	92			0	156			0	152
	0	2	0	24			0	43			0	619
2002	0	15	0	92			0	904			0	439
	0	0	5	73			0	343			0	329
2003	0	0	29	73			6	114			0	335
	0	2	6	137			11	426			0	246
2004	0	7	100	76			0	907			0	214
	0	11	1	79			84	198			0	192

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013
All concentrations reported in nanograms per liter (ng/l)

Sampling Date	SLP3		W122		W129		W133		W14		W24	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
2005	0	9	78	88			50	1,624			0	102
	2	13	6	78			10	435			0	122
2006	1	5	8	64			15	1,990			11	72
	0	5	2	88			0	463			0	93
2007	0	5	13	69			0	552			0	65
	1	5	9	54			14	732				
2008			11	104			23	184			0	24
	0	2	0	95			0	567			0	51
2009	0	0	0	329			0	856			0	26
	0	0	2	194			2	343			0	50
2010	0	2	4	282			6	514			0	82
	0	3	5	243			27	220			0	38
2011			6	22	38	601			75	98	0	41
2012			0	48	0	160			0	0	0	3,580
2013					0	885						
	0	0	0	3	0	2,258	0	114	151	418	0	28

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013

All concentrations reported in nanograms per liter (ng/l)

Sampling Date	W33		W33R		W408		W409		W411		W412		W414	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	16,430			0	153	159	2,198	0	1,274	0	1,317		
	0	110,500			0	44	0	242	0	207	36	339		
1989					5	145	48	579	8	200	16	213		
					12	110	0	830	0	460	0	132		
1990	0	19,448			0	24	0	156	15	451				
	0	290			28	130	43	167	0	336	1	484		
1991	0	17,912			13	343	0	360	12	384	48	1,479		
	0	12,621			25	1,163	0	3,853	0	251	0	5,283		
1992	0	4,841			33	283	0	77,120	24	313	27	1,569		
	0	3,304			4	172	0	49,660	2	181	0	3,796		
1993	0	1,337			5	150	150	49,960	7	191	149	894		
	0	1,013			6	217	0	42,440	5	113	16	677		
1994	8	968			5	70	0	131,000	3	120	20	302		
	0	1,751			3	170	0	151,000	6	221	23	542		
1995	0	1,901			9	143	0	177,110	6	235	18	369		
	0	702			15	135	0	167,130	0	184	0	402		
1996	0	576			0	66	0	805,420	0	79	0	139		
	0	655			0	103	0	312,500	0	253	0	1,620		
1997	0	651			6	169	0	156,500	0	82	0	806		
	120	1,779			0	166	0	64,200	3	253	0	614		
1998	0	2,516			1	96	0	159,200	1	120	30	269		
	0	4,792			0	62	0	107,700	61	424	60	562		
1999	2	2,383			0	64	0	446,860	0	99	20	269		
	0	1,355			2	51	0	342,000	0	79	0	764		
2000	235	1,139			89	103	0	1,196,900	0	56	250	105		
	1	925			0	53	620	468,710	17	140	1	164		
2001	0	1,411					0	269,800	0	124	4	363		
	6	698					0	228,300	0	46	0	1,125		
2002	0	80					0	324,300	0	34	10	243		
	1	54					0	135,200	0	16	3	135		
2003	66	115					0	170,600	38	113	12	82		
	35	179					0	213,700	0	59	15	134		
2004	50	174					0	152,200	97	110	84	132		
	37	170					0	125,800	2	93	11	239		

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013

All concentrations reported in nanograms per liter (ng/l)

Sampling Date	W33		W33R		W408		W409		W411		W412		W414	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
2005	44	2,904					0	148,300	43	75	85	134		
	6	129					0	91,300	3	77	3	115		
2006	12	76					0	48,480	1	57	14	108		
							0	33,000	0	68	9	246		
2007							0	28,800	4	84	3	54		
			16	767			0	18,170	2	78	2	255		
2008			2	496			0	28,200	0	84	15	270		
			15	183			0	35,900	0	95	0	710		
2009			45	885			0	1,600	0	112	0	530		
			11	109			0	29,000	0	22	0	450		
2010			14	122			0	18,170	2	183	0	207		
			31	96			0	8,623	0	197	0	10		
2011			0	27	2	41	0	15,289	0	26	21	72	4	47
2012			0	0	0	0	0	8,351	0	0	0	46	0	0
2013														
			0	22	0	3	89	19,681	0	13	0	25	1	41

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013

All concentrations reported in nanograms per liter (ng/l)

Sampling Date	W410	
	Total CPAH ¹	Total Other PAH ²
1988	0 ³	1,289
	0	1,123
	0	1,435
1989	5	424
	0	357
1991	0	85
	0	5,330
1992	0	15,410
	0	16,930
	0	18,360
1993	0	17,790
	0	19,529
	0	13,400
	0	14,000
1994	0	18,920
	0	21,140
1995	0	21,640
	0	17,590
1996	0	15,970
	0	14,170
1997	0	14,690
	0	10,150
1998	0	9,600
	0	9,600
	0	8,620
	0	1,900
	0	9,690
	0	5,942
1999	0	13,700
	0	21,606
	0	8,780
	0	3,800
2000	0	4,750
	950	44,110
	0	6,207
	0	1,500
2001	0	2,940
	0	6,195
	0	2,804
	0	2,000
2002	0	2,090
	0	2,142
	0	3,340
2003	0	4,453
	0	4,334
2004	0	4,492
	0	7,079
2005	0	7,701
	0	10,553
	0	9,545

Table 6
Historical Summary of Other PAH and
CPAH Analytical Results for St. Peter Aquifer Wells
1988 Through 2013

All concentrations reported in nanograms per liter (ng/l)

Sampling Date	W410	
	Total CPAH ¹	Total Other PAH ²
2006	0	8,359
2007	0	17,690
2009	0	32,718
	0	61,812
2010	0	53,603
	0	62,470
2011	0	82,505
2012	0	32,720
2013	0	165,291
	0	152,685

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 7. St. Peter Aquifer 2013 Pumping Data

Month	W410 Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	2,492,140	56
February	2,244,180	56
March	2,454,860	55
April	2,350,590	54
May	2,369,560	53
June	2,276,710	53
July	2,088,650	47
August	653,370	15
September	777,560	18
October	1,799,010	40
November	1,834,590	42
December	1,891,580	42
TOTAL	23,232,800	44

Table 8
Historical Summary of Other PAH and CPAH
Analytical Results for Platteville Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W101		W121		W130		W131		W143		W18	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	4	0	0	0	0	0	0	0	0	0	10
	0	24	0	0	0	0	0	0	0	0	0	361
1989	0	48	0	0	0	0	0	0	0	1	0	39
1990	0	22	0	0	0	0						
1991												
1992	0	18					0	13			0	10
1994	0	11	0	0			0	0				
1996	0	5	0	0	0	0	0	0	0	1	0	2
	0	32	0	0	0	0	0	0	0	1	0	2
1997	0	31	0	0	0	0	0	0	0	9	0	1
	0	15	0	0	0	0	0	0	0	1	0	1
1998	0	17	0	0	0	0	0	0	0	4	0	1
1998	0	125	0	0	0	0	0	0	0	24	0	0
1999	0	32	0	0	0	0	0	0	0	15	0	1
	0	24	0	0	0	0	0	0	0	4	0	1
2000	0	41	0	0	0	0	0	0	0	0	0	1
	0	32	0	0	0	0					0	1
2001	0	18					0	0	0	5		
	0	12					0	0	0	4		
2002	0	17					0	0	0	10		
	0	6					0	0	0	0		
2003	0	14					0	0	0	0		
	0	3					0	0	0	0		
2004	0	19					0	2	0	0		
	0	3					0	3	0	3		
2005	0	3					0	0	0	6		
	0	2					0	0	0	2		
2006	0	2					0	0	0	14		
	0	3					0	2	0	3		
2007	0	8					0	0	0	3		
	0	0					0	0	0	0		
2008	0	0					0	0	0	0		
	0	0					0	0	0	2		
2009	0	0					0	0	0	0		
	0	10					0	0	0	8		
2010	0	0					0	0.1	0	1		
	0	0					0	0	0	0		
2011	0	0	0	0	0	0	0	0	0	0	0	8
2012												
	0	0	0	0	0	0	0	4	0	0	0	8
2013	0	0	0	0	0	0	0	0	0	0	0	4

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 8
Historical Summary of Other PAH and CPAH
Analytical Results for Platteville Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W20		W22		W27		W424		W426	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	0					0	0	0	1,148
	0	3			0	678	0	0	0	1
1989	0	7			0	1,345	0	1	0	544
1990	0	7	0	0			0	0		
1991										
1992			0	1			0	5	0	82
			0	5			0	11	0	59
1994	0	1					0	0		
1996	0	1	0	0	0	2	0	0	0	56
	0	1	0	0	0	10	0	0		
1997	0	2	0	2	0	281	0	0	0	76
	0	2	0	2	0	416	0	0	0	64
1998	0	1	0	1	0	184	0	0	0	108
1998	0	0	0	115	0	422	0	0	0	1,508
1999	0	1	0	22	0	312	0	0	0	642
	0	1	0	24	0	158	0	0	0	258
2000	0	1	0	3	0	415	0	0	0	112
	0	1	0	43	0	243	0	0	0	160
2001	0	0			0	199			0	131
	0	0			0	99			0	32
2002	0	0			0	123			0	564
	0	0			0	193			0	271
2003	0	6			0	89			0	574
	0	5			0	85			0	289
2004	0	2			0	196			0	636
	0	0			0	116			0	218
2005	0	0			0	143			0	598
	0	0			0	106			0	410
2006	0	0			0	133			0	259
	0	0			0	118			0	262
2007	0	0			0	77			0	301
	0	4			0	97			0	144
2008	0	0			0	48			0	147
	0	0			0	109			0	267
2009	0	0			0	76			0	141
	0	0			0	121			0	116
2010	0	0			0	54			0	92
	0	0			1	69			0	37
2011	0	0	0	0	0	79	0	0	0	121
2012			0	0						
	0	0	0	0	0	64	0	0	0	231
2013	0	0	0	0	0	86	0	0	1	387

Table 8
Historical Summary of Other PAH and CPAH
Analytical Results for Platteville Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W428		W437		W438	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	0				
	0	1				
1989	0	1				
1990	0	1				
1991						
1992	0	3	0	3,096	0	20
	0	9	0	489	0	0
1994	0	0				
1996	0	0				
	0	0				
1997	0	0				
1998	0	0				
1998	0	1				
1999	0	1				
	0	1				
2000	0	2				
	0	1				
2001	0	2	0	6,305	1	1
	0	0	0	5,342	1	1
2002	0	0	0	5,438	0	5
	0	0	0	5,292	0	0
2003	0	0	0	1,116	0	0
	0	0	0	5,977	0	0
2004	0	0	0	6,265	0	0
	0	0	0	4,553	0	0
2005	0	0	0	4,749	0	0
	0	0	0	5,802	0	0
2006	0	0	0	4,212	0	0
	0	0	0	5,443	0	0
2007	0	0	0	3,699	0	0
	0	0	0	3,703	0	0
2008	0	0	0	2,667	0	0
	0	0	0	3,520	0	0
2009	0	0	0	2,507	0	0
	0	0	0	2,868	0	0
2010	0	0	0	1,248	0	0
	0	0	0	1,515	0	0
2011	0	0	0	907	0	0
2012						
	0	0	0	695	0	0
2013	0	1	0	583	0	0

Table 8
Historical Summary of Other PAH and CPAH
Analytical Results for Platteville Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W421		W434	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	764		
	0	1,083		
1989	0	878		
	0	1,024		
	0	995		
	0	828		
1990	0	1,416		
	0	714		
	0	1,409		
	0	1,142		
1991	0	1,449		
	10	1,420		
	0	1,226		
	0	1,358		
1992	0	1,406	0	4,200
	0	1,387		
	0	1,547		
	0	1,309		
1993	0	1,332		
	0	1,545		
	0	1,025		
	0	1,017		
1994	0	1,045		
	0	977		
	0	940		
	0	966		
1995	0	952		
	0	913		
	0	966		
	0	764		
1996	0	618		
	0	630		
	0	884		
	0	843	0	4
1997	0	709		
	0	630	0	7
	0	791		
	0	884		
	0	699	0	5
	0	843		
1998	0	787	0	4
	0	915	0	3
	0	684	0	3
	0	306	0	0
	0	518	0	12
1999	0	393	0	14
	0	611	0	1
	0	389	0	1
	0	479	0	1
2000	0	462	0	2
	0	626	0	5
	49	962	0	4
	0	376	0	1
2001	8	342	0	3
	7	717	0	6
	31	417	0	4
	36	269	0	4

Table 8
Historical Summary of Other PAH and CPAH
Analytical Results for Platteville Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W421		W434	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
2002	8	557	0	5
	6	410	0	5
	0	551	0	5
	8	532		
2003	430	1,361		
	310	2,152	0	4
	5	545	0	3
	715	4,484		
2004	23	679		
	0	618	0	6
	13	759	0	3
	18	996		
2005	8	532		
	0	518	0	3
	0	533	0	3
	6	407		
2006	0	645		
	0	539	0	3
	2	577	0	3
	2	596		
2007	36	608		
	9	608	0	2
	22	799	0	2
	7	682		
2008	106	870	0	2
	38	651	0	2
2009	14	525	0	0
	140	1,319		
2010	360	3,077		
	111	827	0	2
	260	1,652	0	1
	74	999		
2011	65	737		
	6	606		
	181	2,131	0	1
	467	3,269		
2012	528	4,393		
	153	1,565	0	1
	26	624		
2013	10	612	0	1
	5	1,201		

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*, benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole, dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 9. Drift - Platteville Aquifer 2013 Pumping Data

Month	W420		Dewatering		W421		W439	
	Total Gallons Pumped	Monthly Average Flow Rate, Gallons Per Minute	Total Gallons Pumped	Monthly Average Flow Rate, Gallons Per Minute	Total Gallons Pumped	Monthly Average Flow Rate, Gallons Per Minute	Total Gallons Pumped	Monthly Average Flow Rate, Gallons Per Minute
January	2,206,760	49			884,010	20	2,292,240	51
February	1,900,580	47			759,000	19	2,065,850	51
March	2,213,430	50			895,340	20	2,333,220	52
April	2,091,930	48			659,670	15	2,286,750	53
May	2,136,480	48			471,870	11	1,833,300	41
June	2,022,730	47			891,990	21	718,250	17
July	2,023,260	45			1,036,460	23	130,730	3
August	785,580	18	12,694,500	284	459,170	10	1,974,680	44
September	0	0	6,378,900	148	0	0	2,025,500	47
October	0	0	8,586,900	192	0	0	2,250,970	50
November	0	0	10,375,300	232	0	0	2,173,910	50
December	0	0	0	0	0	0	2,174,410	49
TOTAL	15,380,750	29	56,997,800	NA	6,057,510	12	22,259,810	42

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	P109		P112		P307		P308		P309		P310	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	3	0	0								
	0	5										
1989	0	4	0	0								
1990	0	5	0	0								
1991					0	225	0	98	0	318	0	33
1992			0	0			0	62				
1994												
2001	0	1	0	0			0	3	0	27	0	13
	0	0	0	0	0	76	0	10	0	40	0	31
2002	0	0	0	0	0	42	0	3	0	50	0	14
	0	0	0	0	0	89	0	0	0	24	0	10
2003	0	0	0	0	0	42	0	0	0	91	0	16
	0	0	0	0	0	60	0	0	0	43	0	18
2004	0	0	0	0	0	52	0	0	0	38	0	14
	0	0	0	0	0	68	0	2	0	35	0	37
2005	0	0	0	0	0	110	0	0	0	75	0	31
	0	0	0	0	0	122	0	0	0	57	0	28
2006	0	0	0	0	0	27	0	5	0	47	0	11
	0	0	0	0	0	140	0	0	0	31	0	15
2007	0	0	0	0	0	97	0	9	0	47	0	12
	0	0	0	0	0	78	0	4	0	26	0	9
2008	0	0	0	0	0	63	0	1	0	20	0	5
	0	0	0	0	0	41	0	1	0	21	0	8
2009	0	0	0	0	0	43	0	0	0	16	0	2
	0	0	0	0	0	46	0	0	0	10	0	0
2010	0	0	0	0	0	17	0	1	0	12	0	3
			0	0	0	15	0	4	0	7	0	2
2011	0	0			0	14	0	2	0	7	0	1
									0	13		
2012									0	11		
	0	0	0	0	0	11	0	0	0	12	0	1
2013	0	0	0	0	0	10	0	3	0	26	0	2

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*,
benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole,
dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene,
perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	P312		W10		W117		W128		W136		W15	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988			0 ³	0	0	7	0	0	0	0		
			0	0	0	19	0	0	0	0		
1989			2	6	0	28	0	0	0	0		
1990			1	4	0	29	0	0			0	11
1991	0	14										
1992	0	23	0	0	0	12			0	1	2	8
1994			0	0	0	6	0	0	0	0	0	1
2001	0	3			0	2			0	0		
	0	4			0	1			0	0		
2002	0	4			0	0			0	0		
	0	5			0	0			0	0		
2003	0	9			0	0			0	0		
	0	6			0	0			0	0		
2004	0	11			0	0			0	0		
	0	4			0	0			0	0		
2005	0	14			0	0			0	0		
	0	7			0	0			0	0		
2006	0	12			0	0			0	2		
	0	6			0	0			0	0		
2007	0	5			0	0	0	0	0	10		
	0	7			0	0	0	0	0	8		
2008	0	6			0	0	0	0	0	0		
	0	4			0	0	0	0	0	0		
2009	0	0			0	0	0	0	0	0		
	0	0			0	0	0	0	0	0		
2010	0	3			0	0	0	0	0	0		
	0	2			0	0	0	0	0	0		
2011											0	0
											0	0
2012											0	0
	0	1	0	0	0	0	0	0	0	0	0	0
2013	0	1	0	0	0	0	0	0	0	0	0	0

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W2		W423		W425		W427		W9	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	0	0	0	0	4	0	0		
	0	0	0	0	0	6	0	0		
1989	0	0	0	0	0	6	0	0		
1990			0	0			0	0		
1991										
1992					0	6	0	1		
1994	0	0	0	0	0	4				
2001										
							0	0		
2002							0	0		
							0	0		
2003							0	0		
							0	0		
2004							0	0		
							0	0		
2005							0	0		
							0	0		
2006							0	0		
							0	0		
2007							0	0		
							0	0		
2008							0	0		
							0	0		
2009							0	0		
							0	0		
2010							0	0		
							0	0		
2011	0	0							0	9
	0	0							0	11
2012	0	0							0	0
	0	0					0	0	0	126
2013	0	0	0	0	0	17	0	0	0	2

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W420		W422		W439	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1988	0 ³	2,477	0	77		
	0	1,103	0	50		
1989	0	2,389	0	48		
	0	3,418	0	52		
	0	3,442	0	61		
	0	3,016	0	52		
1990	0	3,949	0	74		
	0	2,430	0	59		
	0	3,143	0	88		
	0	3,024	0	65		
1991	0	4,200	0	67		
	0	2,494	0	59		
	88	4,967				
	0	4,163	0	89		
1992	0	3,172	0	125		
	0	3,229	0	77		
	0	2,281	0	100		
	0	2,374	0	90		
1993	0	2,537	0	94		
	0	3,512	0	118		
	0	1,825	0	81		
	0	2,052	0	74		
1994	0	2,033	0	67		
	0	2,573	0	66		
	0	2,439	0	66		
	0	2,507	0	59		
1995	0	2,436	0	54	0	3,934
	0	2,407	0	62	0	4,053
	0	2,526	0	53	0	2,564
	0	2,543	0	29	0	2,115
1996	0	1,968	0	24	0	1,552
	0	2,165	0	26	0	1,419
	0	2,725	0	26	0	1,765
	0	2,164	0	23	0	1,557
1997	0	2,324	0	24	0	1,552
	0	2,165	0	26	0	1,419
	0	2,974	0	20	0	1,813
	0	2,725	0	26	0	1,765
	0	2,151	0	19	0	1,547
	0	2,164	0	23	0	1,557
1998	0	3,519	0	18	0	1,236
	0	2,938	0	21	0	1,377
	0	2,933	0	17	0	1,221
	0	3,144	0	7	0	978
	0	2,570	0	13	0	954

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W420		W422		W439	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
1999	0	3,374	0	20	0	1,385
	0	3,714	0	14	0	1,278
	0	2,425	0	13	0	755
	0	2,145	0	13	0	1,123
2000	0	2,353	0	12	0	1,087
	0	4,519	0	19	0	1,985
	0	3,093	0	13	0	1,868
	0	2,525	0	6	0	1,187
2001	0	3,487			0	1,498
	0	6,946	0	20	0	1,623
	0	2,528	0	12	0	1,056
	0	3,547	0	7	0	1,095
2002	0	4,405	0	15	0	1,205
	0	4,110	0	15	0	1,214
	0	3,981	0	9	0	1,027
	0	3,456				
2003	0	3,558				
	0	3,899	0	9	0	921
	0	3,148	0	4	0	1,495
	0	2,835				
2004	0	3,771				
	0	3,805	0	4	0	1,260
	0	3,167	0	1	0	1,789
	0	4,685				
2005	0	4,005	0	7	0	1,395
	0	2,463				
	0	4,447	0	9	0	1,303
	0	4,204				
2006	0	3,576				
	0	3,511	0	7	0	1,327
	0	3,782	0	0	0	1,015
	0	3,671				
2007	0	3,444				
	0	3,029	0	6	0	898
	0	3,209	0	9	0	963
	0	3,531				
2008	0	3,397	0	28	0	1,776
	0	3,514	0	10		
2009	0	2,050				
	0	3,168	0	7	0	1,144
	0	3,483	0	5	0	1,308
2010	0	2,911				
	0	2,623	0	14	0	905
	0	2,389	0	10	0	789
	0	2,202				

Table 10
Historical Summary of Other PAH and CPAH
Analytical Results for Drift Aquifer Wells,
1988 through 2013

All concentrations in micrograms per liter (ug/l).

Sampling Date	W420		W422		W439	
	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²	Total CPAH ¹	Total Other PAH ²
2011	0	2,277				
	0	2,252			0	1,002
	0	1,762			0	433
	0	1,371				
2012	0	1,686			0	747
	0	1,950	0	13	0	484
	0	1,975				
2013	0	813	0	9	0	2,336
	0	219				

Notes:

¹ Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, quinoline*,
benzo(j)fluoranthene**, benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

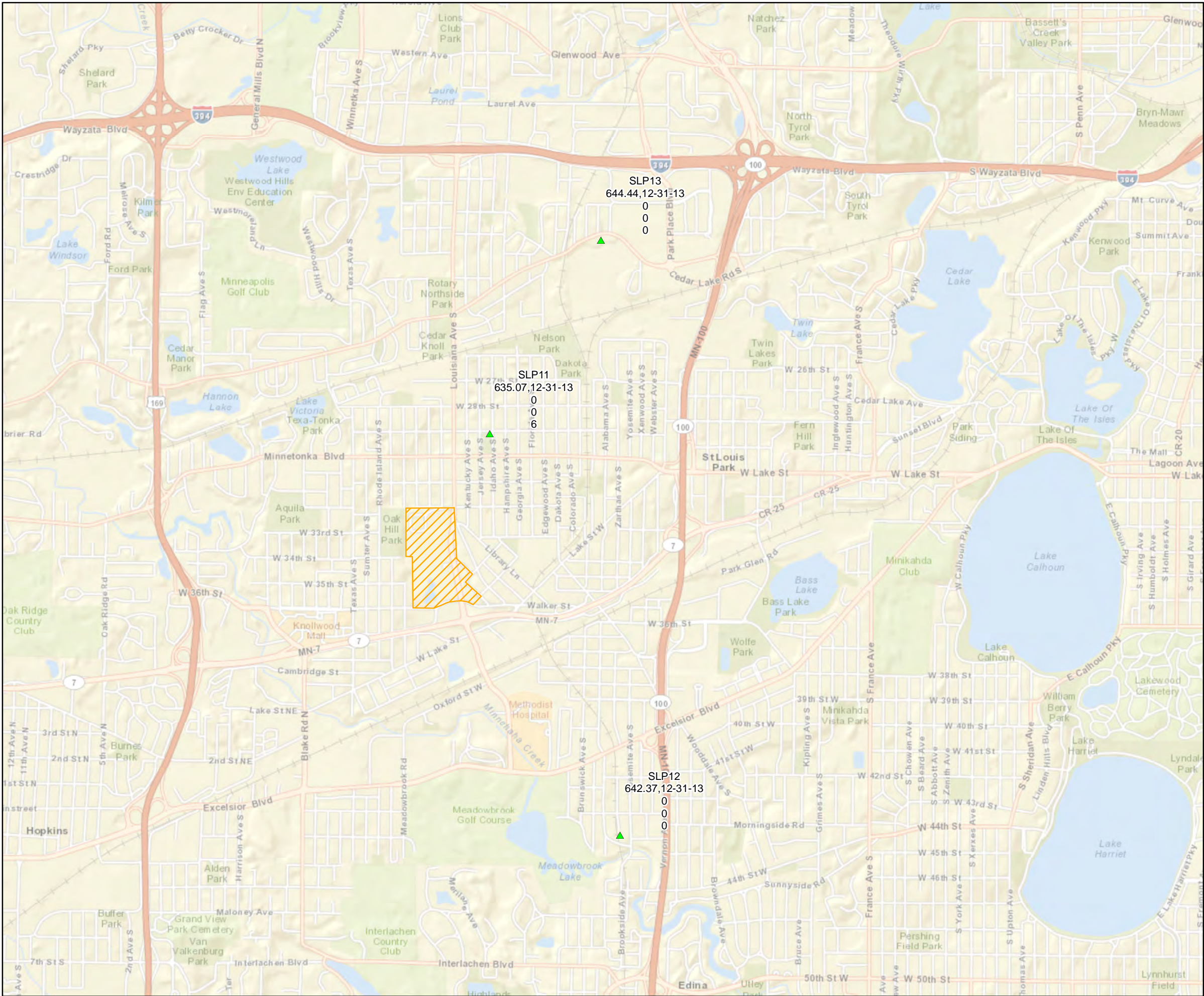
**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

² Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenaphthene, acenaphthylene, acridine, anthracene, benzo(k)fluoranthene, 2,3-benzofuran, benzo(e)pyrene, benzo(b)thiophene, biphenyl, carbazole,
dibenzothiophene, dibenzofuran, 2,3-dihydroindene, fluoranthene, fluorene, indene, indole, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene,
perylene, phenanthrene, pyrene

³ Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

Figures



Explanation

REILLY SITE

Well Location

Well Name

Groundwater Elevation, Date Measured

Sum of Benzo(a)pyrene and Dibenzo(a,h)anthracene (ng/L)

Sum of Carconogenic PAH parameters (ng/L)

Sum of Other PAH parameters (ng/L)

-- = Not Sampled/Not Available

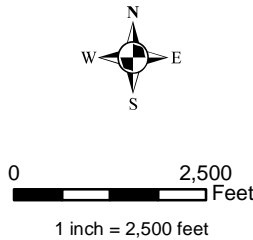
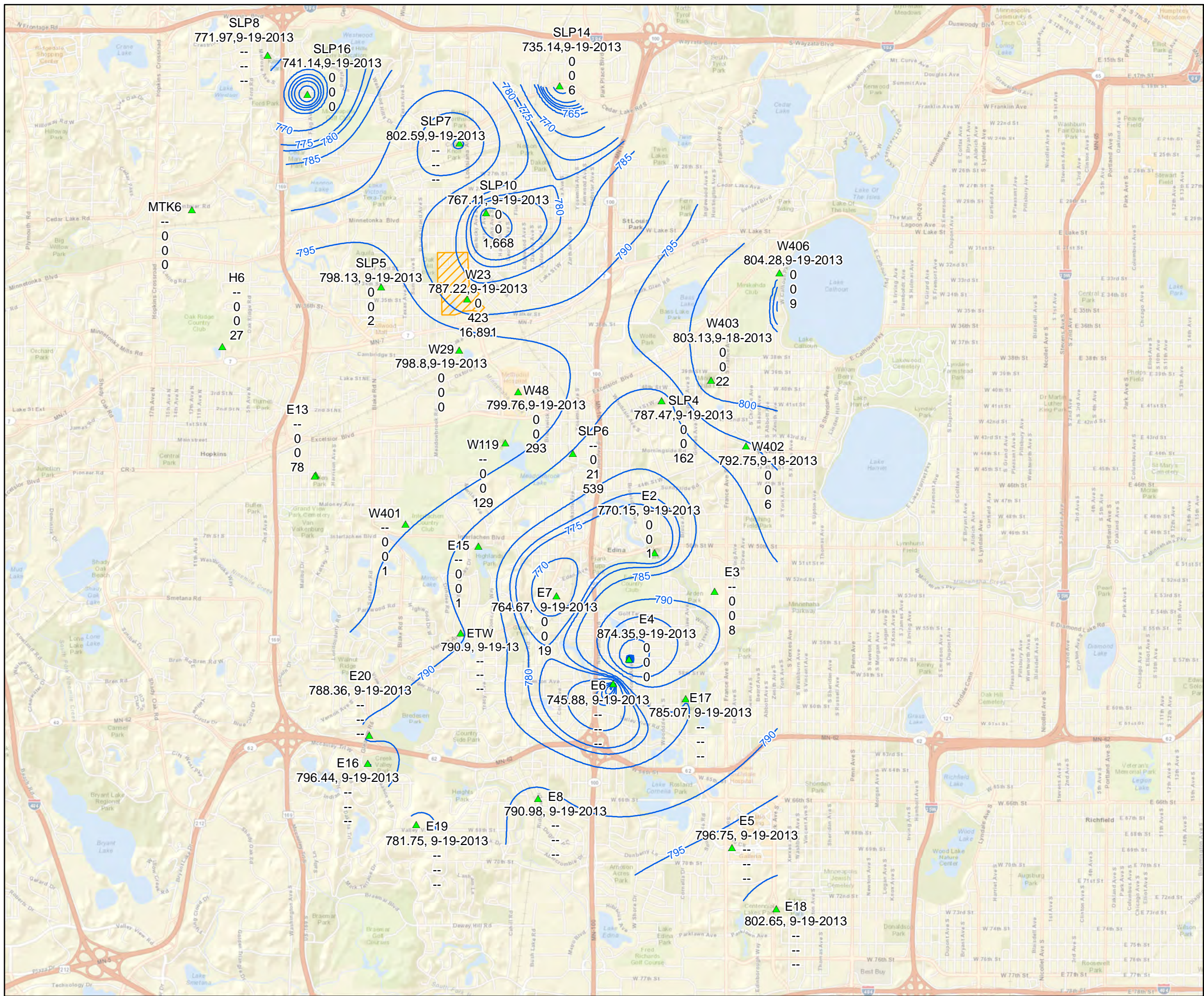


Figure 1
Summary of 2013 Groundwater Monitoring Results
for the Mt. Simon-Hinckley Aquifer
2013 Annual Report
Reilly Site, City of St. Louis Park, Minnesota

File: Fig_1_MtSH_Aquifer
Summit Proj. No.: 0987-0009
Plot Date: 03-07-14
Arc Operator: RRE
Reviewed by: WMG





Explanation

- REILLY SITE
- Groundwater Elevation Contour (CI = 5 FT)
- Well Location

Well Name
Groundwater Elevation, Date Measured
Sum of Benzo(a)pyrene and Dibenzo(a,h)anthracene (ng/L)
Sum of Carconogenic PAH parameters (ng/L)
Sum of Other PAH parameters (ng/L)
-- = Not Sampled/Not Available

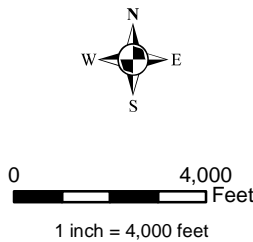
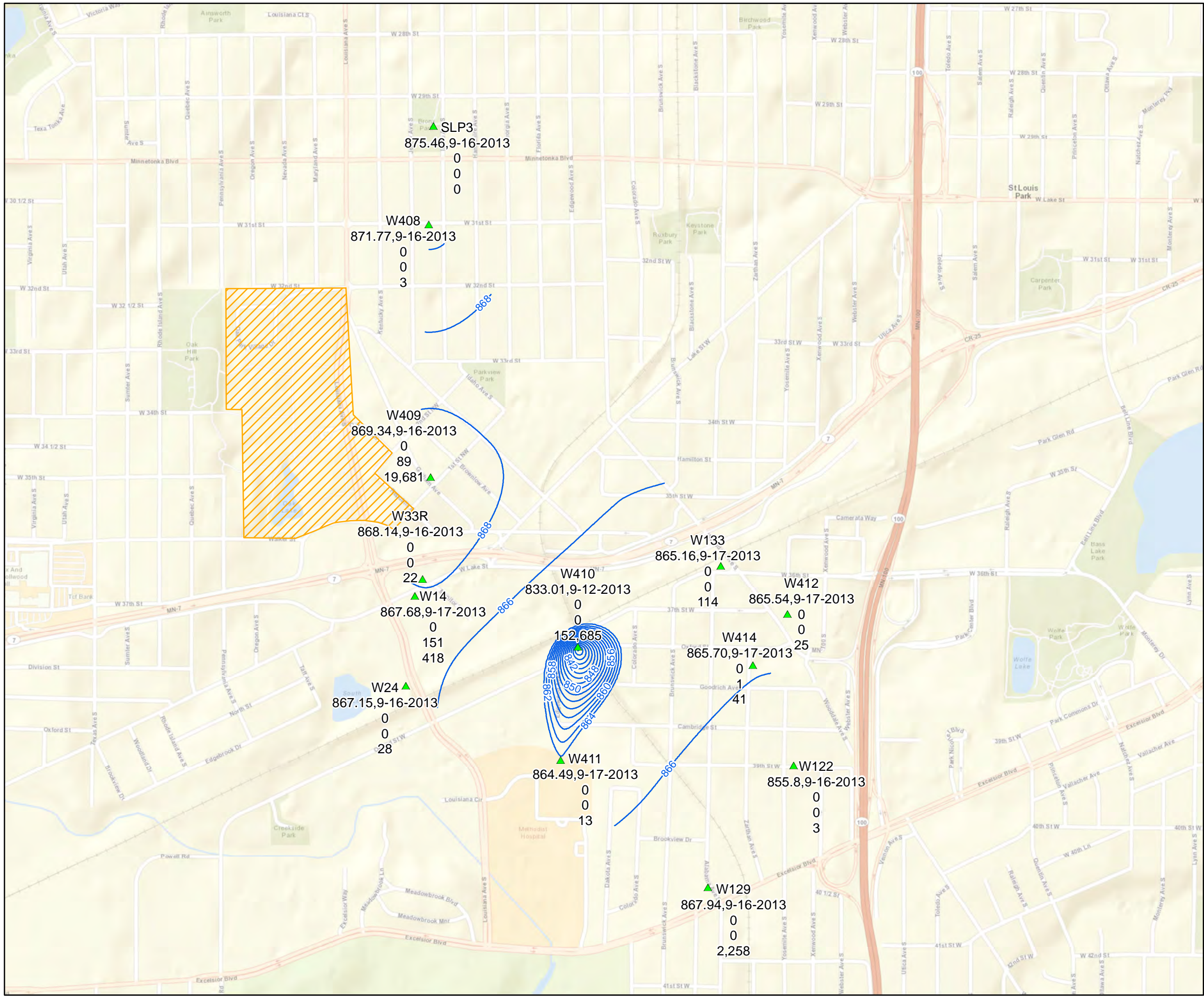


Figure 2
Summary of 2013 Groundwater Monitoring Results
For the Prairie Du Chien - Jordan Aquifer
2013 Annual Report
Reilly Site, City of St. Louis Park, Minnesota

File: Fig_2_Prairie_D_Chien_Aquifer
Summit Proj. No.: 0987-0009
Plot Date: 03-12-14
Arc Operator: RRE
Reviewed by: WMG





Explanation

- REILLY SITE
- Well Location
- Groundwater Elevation Contour (CI = 2 FT)
Note: Wells SLP3 (multiaquifer) and W122 (basal St. Peter) not used for contouring

Well Name
Groundwater Elevation, Date Measured
Sum of Benzo(a)pyrene and Dibenzo(a,h)anthracene (ng/L)
Sum of Carconogenic PAH parameters (ng/L)
Sum of Other PAH parameters (ng/L)
-- = Not Sampled/Not Available

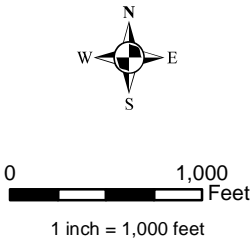
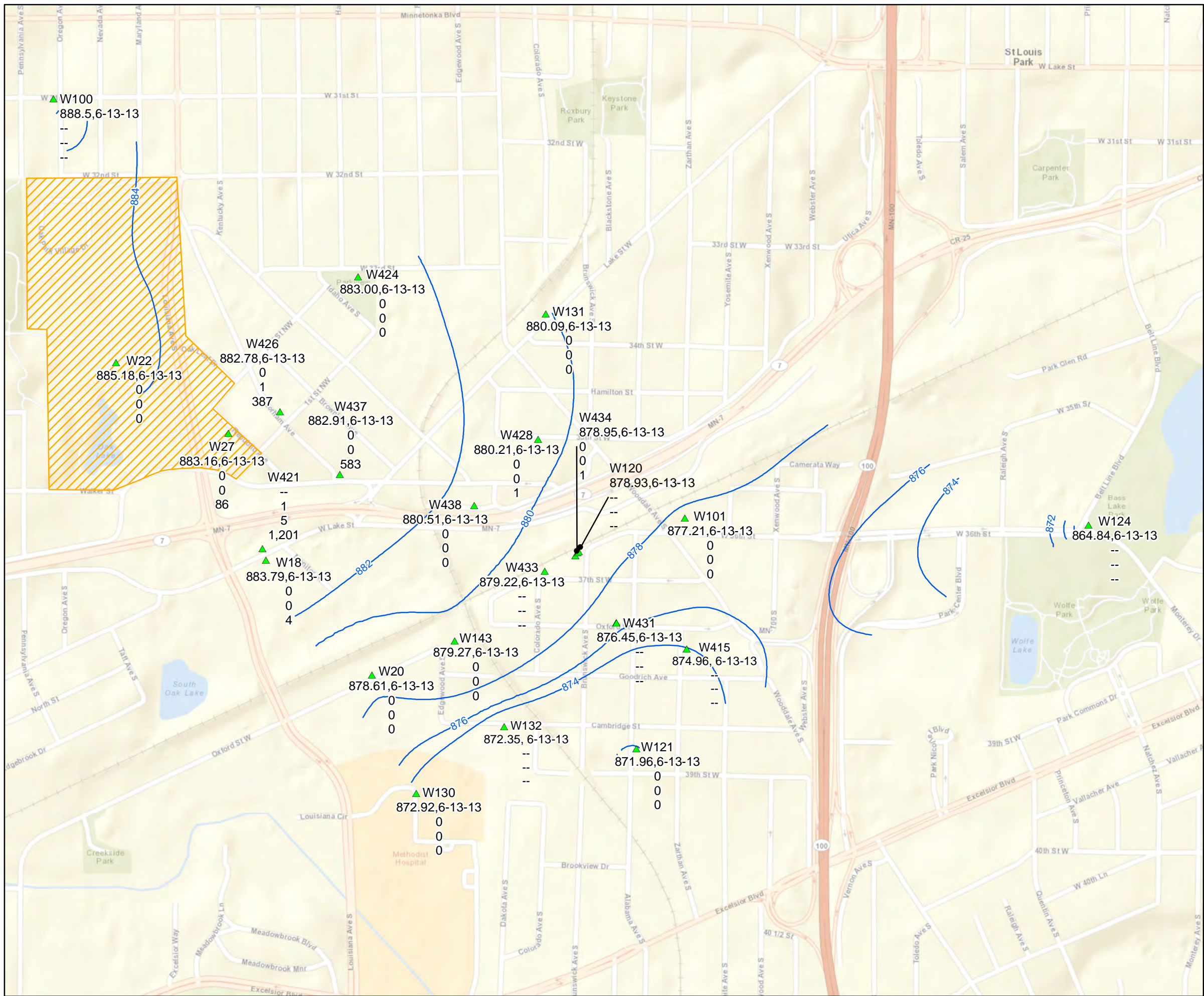



Figure 3
Summary of 2013 Groundwater Monitoring Results
For the St. Peter Aquifer
2013 Annual Report
Reilly Site, City of St. Louis Park, Minnesota


File: Fig_3_StPeter_Aquifer
Summit Proj. No.: 0987-0009
Plot Date: 03-07-14
Arc Operator: RRE
Reviewed by: WMG






Explanation

 REILLY SITE

 Groundwater Elevation Contour (CI = 2 FT)

 Well Location

Well Name
Groundwater Elevation, Date Measured
Sum of Benzo(a)pyrene and Dibenzo(a,h)anthracene (ug/L)
Sum of Carconogenic PAH parameters (ug/L)
Sum of Other PAH parameters (ug/L)
-- = Not Sampled/Not Available



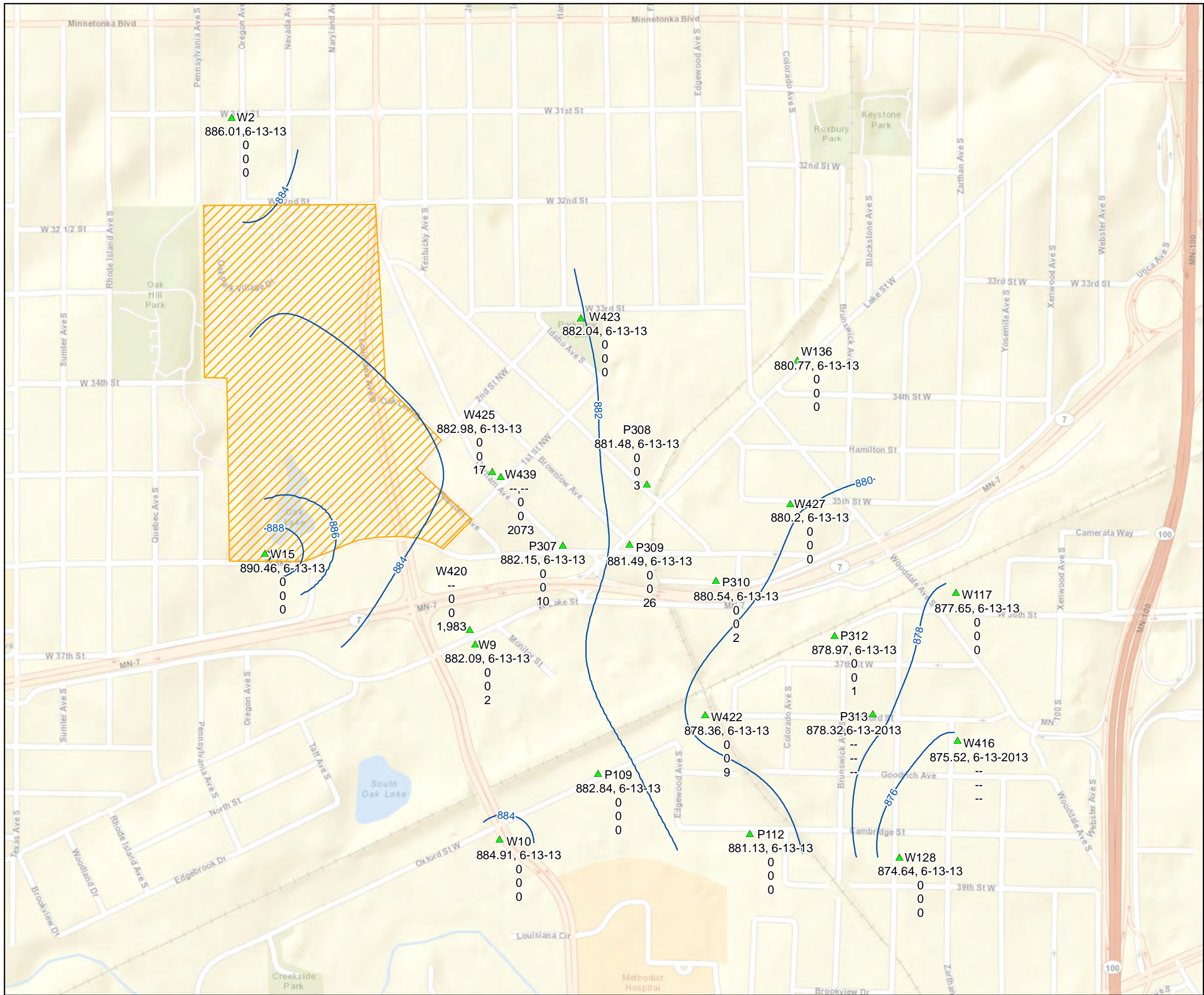


1 inch = 800 feet

Figure 4
Summary of 2013 Groundwater Monitoring Results
for the Platteville Aquifer
2013 Annual Report
Reilly Site, City of St. Louis Park, Minnesota

File: Fig_4_Platteville_Aquifer
Summit Proj. No.: 0987-0009
Plot Date: 03-12-14
Arc Operator: RRE
Reviewed by: WMG





Explanation

- REILLY SITE
 - Groundwater Elevation Contour (CI = 2 FT)
 - Well Location
- Well Name
Groundwater Elevation, Date Measured
Sum of Benzo(a)pyrene and Dibenzo(a,h)anthracene (ug/L)
Sum of Carconogenic PAH parameters (ug/L)
Sum of Other PAH parameters (ug/L)
-- = Not Sampled/Not Available

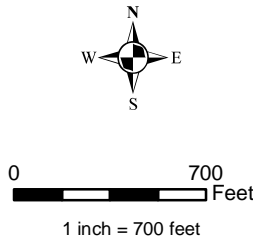


Figure 5

Figure 5
Summary of 2013 Groundwater Monitoring Results
for the Platteville Aquifer
2013 Annual Report
Reilly Site, City of St. Louis Park, Minnesota

File: Fig_5_drift_Aquifer
Summit Proj. No.: 0987-0009
Plot Date: 03-12-14
Arc Operator: RRE
Reviewed by: WMG

